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Canada. National Health and Welfare,  
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Simplified stage lighting.

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The image is a book cover for 'Simplified Stage Lighting'. It features a stylized illustration of a hand holding a stage light fixture. The hand is black and positioned at the top left, gripping a vertical black bar that represents the light stand. The background is a vibrant green with a fine, white, cross-hatched texture. A large, white, curved band sweeps across the middle of the cover, creating a sense of movement and depth. The title 'SIMPLIFIED STAGE LIGHTING' is printed in a clean, white, sans-serif font, with 'SIMPLIFIED' and 'STAGE' on one line and 'LIGHTING' on the line below, separated by a small circle. The overall design is modern and professional, appealing to students and professionals in the field of stage lighting.

**SIMPLIFIED**

**STAGE**

○ **LIGHTING**





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# SIMPLIFIED STAGE LIGHTING

Produced by  
Information Services Division  
for  
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Ottawa

# Illustrations

NOTE: The number appearing in the body of the various illustrations refer to the numbers of the frames in the filmstrip of the same name, from which these illustrations are taken.

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This booklet provides practical assistance to those faced with the many problems of planning a play in the limited space commonly available in community halls.

Stage production provides an ideal outlet for diverse talents and thus is gaining popularity in many centres. Because the well-adjusted personality needs and depends upon suitable outlets for constructive, creative abilities, and the field of drama is admirably suited for this purpose, "putting on a play" has become an important part of Canada's fitness and recreation programme.



# Simplified Stage Lighting

The production of a play depends on the successful performance of a great number of jobs. Most groups make provision for people to build the stage settings, to collect the properties and to find or make costumes. The lighting of the stage, however, is a task which frequently fails to get the attention it merits. While most stages have limited lighting equipment, it is still possible to use it in such a way, that it can become a positive factor in play production, and not simply an unvarying and rigid device that is only turned on to make the stage visible.

Stage Lighting can be of the greatest assistance in helping to "tell the story of the play" in a variety of ways. Such lighting requires some special equipment and a knowledge of the purposes for which it can be used.

## STAGE LIGHTING - WHY?

The first purpose is the basic one, that of illuminating the players. This must not be forgotten. No play is properly lit unless the expressions on the faces of the actors can be seen by every member of the audience.

Secondly, the light has an artistic purpose. The stage and its settings are a picture; the effect of this picture will depend on how it is lit. Careful distribution of light and shade can give a third dimension, both to the settings and to the players who appear in front of them. The colour of the light used can change the appearance of the costumes, the make-up and the settings.



Lighting can play an important part in the dramatic content of a play by directing the attention of the audience to particular areas of the stage and to particular actors and actresses. This direction is done by variations in the intensity of the light used.

The next purpose is the reproduction of natural effects. Every natural source of light gives a different quality of illumination. If there is one scene which is in daylight and the next in the night-time, then stage lighting must convey this information clearly. In any particular scene there is generally some natural source of light. It may be a door, a window or a lamp. The light of the stage should be arranged to appear to come from such a natural source. Such lighting is said to be "motivated".

Lastly, lighting on the stage can be used to create atmosphere and mood. Great contrasts between light and shade are suitable for scenes of tragedy; while comedy scenes should be more brilliantly illuminated. Colour of light can also influence the mood; warm colours such as yellow, pink and red give a feeling of gaiety, while cooler colours such as blue, green and violet give a feeling of sadness.

LIGHTING THE ACTUAL STAGE The easiest way to understand what these purposes really mean would be to go into a hall which was properly equipped and try out the variations which can be achieved in the stage lighting. Suppose for a moment that you are in such a hall and that a rehearsal is in progress.

ROOM LIGHTING ONLY Suppose that the lights in the auditorium are on and no stage lighting is in use. The proscenium arch is more clearly visible than the actors



that it frames. Anyone seated in the auditorium will be better illuminated than the players. There is no "theatrical effect" to draw attention towards the stage. In fact it will probably be difficult to distinguish the features of the players and the expressions on their faces.

TURN UP THE LIGHTS Suppose that the electrician is now asked to put out the lights in the auditorium and put on all the lighting on the stage. A flood of illumination immediately draws our attention to the stage. Generally, however, this light will be so bright and so evenly distributed that no part of the stage is given more importance than the other. There is no shadow and no contrast. Players in pastel coloured costumes do not stand out from the background if it is also a pale tone. Without make-up the faces of the actors appear flat and it is not possible to distinguish changes in expression. Above all, the lack of shadows in the furnishings of the room gives the stage a shallow appearance which is unreal.

ADD A FEW SHADOWS Suppose now that we ask the electrician to provide us with some shades and shadows on the stage. He can only do this, of course, by varying the intensities of the lights he is using and the directions from which they come. If for instance, the lighting is directed at the players rather than the scenery in front of which they play, it will be found that they stand out from their backgrounds and the setting appears to have a third dimension. If the light on one side of the players is brighter than on the other, shadows will appear on their faces and it will become easier to appreciate the changes of expression. Light which is used to illuminate the players in this way is called "specific illumination". The lighting which is used on the stage as a whole is called "general illumination".



FOCUS THE ATTENTION The next step is to use the light to concentrate the attention of the audience on a particular centre of interest. At any moment in the action of a play, there will be an actor or group of actors who are more important in telling the story of the play than the other players.

If the lighting can be arranged so that certain areas can be more brightly illuminated and the director can arrange for the action of the play to take place in these areas, then the lighting can be used to bring out the dramatic meaning of the scenes. On a small stage, it will seldom be possible to have more than two or three such special areas.

USE THE NATURAL SOURCE So far no attempt has been made to reproduce natural effects. The stage lighting has not been "motivated"; there has been no indication of the natural source of the light. The commonest sources of light in any room are the windows and doors through which daylight or moonlight can come and the various artificial lamps in electric lights, oil lamps or candles - and in some places, fireplaces. Should the natural lighting source be from outside, then the first thing that must be done is to provide some sort of instrument which will shine through the appropriate door or window of the stage. At the same time, any object or piece of scenery that can be seen through these openings must be appropriately lit. The effect of a beam of light shining through a window can be entirely spoiled if at the same time we can see a piece of scenery through that window which is not properly illuminated. Furthermore, all the rest of the lighting on the stage must agree with this motivation. If we have, for instance, two windows on each side of the stage, we must decide from which direction the sun is shining and provide a flood of light from the window on that side. The



lighting on the faces on the players and on their clothing should also be brighter on the side from which the sunlight is supposed to come.

Another factor which will help to make the stage lighting appear natural is the colour of the light which is to be used. Moonlight is obviously colder than direct sunlight; the light from a fire will be warmer.

In actual practice, it is seldom found possible to provide visible beams of sunlight or moonlight and at the same time give sufficient light to the faces of the players. It is often possible, however, to open a scene with the main motivating light as the only source of illumination and then slowly to raise the other lights as the action of the play starts. In this way, the audience will get the effect of sunlight or moonlight which will remain unconsciously in their minds throughout the rest of the scene.

CREATING THE MOOD Distribution of both light and colour can do much to establish a mood for your play or to create a specific atmosphere. Reds, yellows and pinks are known as warm colours and will give to the audience a feeling of cheerfulness which is suitable for comedy. Blue, green and violet light are regarded as cool colours and are more appropriate for drama or tragedy, as they give a feeling of sadness or depression. Green is particularly used to give a ghostly effect.

In the same way, variations in contrast between light and shade can affect the mood of the play. Bright illumination with little shadow is best for comedy while in tragedies and drama, it is best to give great contrast between light and shadow. Ideally, the lighting system should be capable of



giving variations in colour and distribution, so that the lighting can be changed to accord with the changing mood.

## STAGE LIGHTING - HOW ?

Having seen some of the effects that can be achieved with light on the stage, the next task is to see how these can be obtained. What are the tools, how do they work and how should they be used? There are three variable factors, Distribution, Intensity and Colour.

### VARIATIONS IN DISTRIBUTION

Variation in light distribution is, perhaps, the most important factor in producing effective stage lighting. Different effects are obtained by varying the sources and the positions of the sources.

These sources in their turn can be classified as to whether they give specific or general illumination. The sources most generally used on the stage are:-

1. Striplights
2. Floodlights
3. Spotlights

The first of these are used entirely for general illumination. Floodlights can be used for either general or specific illumination and spotlights are only used for specific illumination.

STRIPLIGHTS Striplights consist of a number of light sources placed side by side so as to give a widespread of illumination over a large area. They may be hung from



above or laid on the floor. Ideally they should be wired in three or more circuits, each circuit giving light of a different colour, so that variations can be made in the colour of light given.

The oldest form of striplight is known as the individual bulb strip. It consists of a number of bulbs placed along a batten with each bulb coloured by dipping it in a dye. This practice is not practical with the modern gas-filled globes as they become heated and the dye burns off. (see Fig. 2. A)

A more modern design is called the box strip. Each light is housed separately and fitted with a reflector, the front of each housing is fitted with a frame into which can be placed a colour filter made of gelatine or some similar material. Successive lights of the same colour should be not more than 18 inches apart. (see Fig. 2. B) In the most modern of permanent striplights, the complete unit is housed in metal and the colour is produced by glass roundels. (see Fig. 2. C)

Striplights are now being superseded by other light sources. They are, however, available in most halls and they still have considerable use in the theatre. The commonest positions in which they may be found are on a batten hung immediately behind the front valance and on the floor placed in front of the curtain where they are known as footlights.

**FLOODLIGHTS** Floodlights are designed and used more for general than specific illumination. They are made so that they can be used on stands on the stage, hung from battens or laid on the floor. Generally speaking they consist of a high-powered light globe set in some sort of container that directs the illumination in one direction. They are usually



painted white inside or provided with reflectors so as to give the maximum light.

The commonest form of floodlight is that called the "olivette". It consists of a 1000 watt globe in a sheet metal container with a square front. The sides of the container slope forward towards the front and are painted white so as to act as reflectors. Normally, olivettes are mounted on adjustable stands which can be used on the floor to shine light through a door or a window, or to illuminate a sky-cloth from the side. (see Fig. 3.A)

A smaller type of floodlight known as a cyclorama flood consists of a semi-circular or bowl-like cast metal container which is painted white so as to act as a reflector. These can be hung from above and are used to light the sky-cloth. They are generally available in the 500 watt power. (see Fig. 3.B)

A very useful type of flood called the batten flood is made in the same way as the single element of the box strip light. It can be hung from a batten and used to light the playing area. If it is provided with a metal hood so as to restrict the spread of illumination, it will be found very useful to give specific illumination on the stage. (see Fig. 3.C)

Many stages in Great Britain are provided with what is known as an area flood. This consists of a high-powered floodlight which is hung from the ceiling immediately above the main acting area. They are generally 2000 watts and are useful for softening the shadows on the stage furnishings and the faces of the players in the central area of the stage. They are particularly useful when staging plays against a curtain background, when it is desirable to keep as much light as possible off the curtains. (see Fig. 3.D)



HOME-MADE FLOODLIGHTS Floodlights are not difficult to make and such things as water pails, candy pails and wash basins are extremely useful for this purpose. An ordinary square tin biscuit box can be made into a useful floodlight. The socket and bulb are fitted through one side of the box and grooves are soldered on to the front of the opening to hold a colour frame. It is necessary to make slits in the sides or the top of the light to provide adequate ventilation. These slits should be given metal shields which are also soldered on so that no light can spill through them. The inside of the box is painted with white enamel so as to act as a reflector. Some sort of mounting attachment is necessary so that the instrument can be firmly fixed either to a batten or a standard. This attachment should be made of heavy metal so as to bear the weight of the lighting instrument. (see Fig.4)

A simple form of standard for these lights consists of a solid cast concrete base into which is set a 5 foot length of ordinary 1 inch plumber's piping. At the top of the pipe, there is a T-piece and two short lengths of pipes running at right angles. The olivette can be hung from these short arms by means of two wires. This concrete base is very heavy and difficult to move about the stage and some groups have very successfully improvised bases for their standards by using cast metal pulley-wheels and automobile steering wheels salvaged from used cars.

The biscuit box flood does not allow the light rays to diverge to any very great extent, and many groups prefer to make a floodlight resembling the commercial olivette. The following are appropriate dimensions - opening 15" square; converging side walls - 12" square; back walls - 6"



square. The socket and bulb are fitted through the back wall. Grooves to accommodate a colour frame are soldered on to the front opening and ventilating slits with shields must be provided. The inside is enamelled white. (see Fig.5.A)

In place of the ordinary strip light, a very effective and simple light instrument can be made from a number of tin candy pails or similar containers. Each pail has a hole cut in the bottom through which is fitted a lamp socket. A wooden batten of suitable length also has holes bored in it and the pails are nailed to the batten so that the lamp sockets protrude through these holes. Each pail must have the usual ventilating system, grooves to accommodate a colour frame and is enamelled white on the inside. (see Fig.5.B)

WINDOW DISPLAY BULBS Extremely useful sources of illumination for the stage are the display bulbs now seen in almost every store window all over the country. These are in effect a complete spotlight or floodlight built into a bulb. They are of great practical use on small stages. The lower powers, 150 watts, do not have such long "throws" as the types of instruments which are specially designed for stage work; that is to say they have to be placed nearer to the object to be illuminated. Newer types are now available in higher powers and it is possible that they are capable of performing nearly all the tasks for which standard equipment has been devised. Their comparatively low initial cost makes these lighting instruments very attractive for beginning groups. Their replacement cost is, however, high, since when they are burnt out or broken the whole instrument must be purchased fresh instead of only paying for a new bulb. (see Fig.6) There are many excellent swivel fittings available which make them very flexible in use.



SPOTLIGHTS The chief source of specific illumination is a spotlight. This is a light of great power that is capable of casting a narrow beam of light on to a small area. This is done by concentrating the light by means of a lens, mirror or tube so that as much as possible of the light is shone in a single beam. There are many varieties of stage spot on the market and some are better than others. Which particular type should be made or purchased for any particular job is a question on which expert guidance should be sought. Full spots are of 500 watts and up; smaller spots are known as baby spots.

COMMERCIAL SPOTLIGHTS The ordinary baby spot is generally of 250 to 500 watts. It has a lens to concentrate the light and is fitted with a clamp holder designed to fix on to a pipe. A screw fitted on the side enables the operator to adjust the distance of the bulb from the lens and thus focus the beam and increase or decrease the area illuminated. Grooves are fitted to the front of the spotlight to accommodate the colour frames. This type of spot should seldom be used at a distance greater than 15 feet from the object to be illuminated. (see Fig. 7.A)

The ordinary baby spot gives a very sharp area of illumination on the stage. When lighting the acting area, this is frequently undesirable. For this reason a type of lens known as the "fresnal lens" has been devised. It is an adaption of a principal used in lighthouses. The lens is a stepped one made in varying planes so that it gives an illuminated area that has soft edges. When several of this type of spotlight are used to illuminate the acting area, an even distribution of light is much easier to achieve, (see Fig. 7.C)

When the source of light has to be placed more than 15 feet



from the object to be illuminated a more powerful type of spotlight is required. Perhaps the commonest form is what is known as the mirror spot. This is a large edition of the baby spot with a mirror reflector behind the bulb and generally a greater variation in the size of the spot given. (see Fig.7.B)

When a very long throw is required, as in outdoor shows or pageants in big halls, a type of instrument similar to the lighting used in baseball parks is required. These are really spotfloods. The light is concentrated by means of a curved mirror-reflector and there is no lens in front. They can be placed up to 100 feet from the object to be illuminated, but the size of the spot given can only be varied to a very small extent. (see Fig.7.D)

Where it is necessary to vary the size of the spot and to give a very long throw, special and expensive types of instruments are required. An example of these is what is known as the "Ellipsoidal Spotlight". This is fitted with a special parabolic mirror as well as a lens which concentrates very nearly all the light into a single narrow beam. (see Fig.7.E)

HOME-MADE SPOTLIGHTS A home-made spotlight can be constructed on the same principle as the biscuit-box flood. It is called the "Stove-Pipe Spotlight". A length of stove-pipe about 18" long, has one end closed with a piece of tin, through this is fitted a lamp socket and lamp. The inside of the pipe is painted with white enamel, except for the front 6", which is painted black. Two grooves are fitted to the front end for holding the colour frame. Slits are cut in the side to provide ventilation and these are provided with shields to prevent light from spilling through them.



A mounting attachment made of heavy metal, which will enable the spotlight to be hung from the batten, is provided. (see Fig. 8 A & B)

If a lens can be added to this spotlight, its efficiency will be greatly improved. Focusing arrangements can be supplied by using two stove-pipes, the one fitting into the other. By sliding the smaller stove-pipe into the larger, the beam of light may be made larger. (see Fig. 8. C & D) Some groups have successfully used salvaged car lights for their high-power spots.

## THE POSITIONS OF LIGHTING INSTRUMENTS

IN THE COMMERCIAL THEATRE A full understanding of the use of these instruments can only be reached by studying their position in the theatre in relation to the stage. In the commercial theatre (see Fig. 9) the most usual types of lighting are:-

- (1) Front-of-House Lights.
- (2) Footlights or Floats.
- (3) Front Border or No. 1 Batten.
- (4) Cyclorama.
- (5) Tormentor or Perch Spots.

The Front-of-House lights should not be confused with lighting used to illuminate the auditorium. These are spotlights of high power which are normally hung on the second beam of the auditorium or on the front of the galley in such a way that they illuminate the front portion of the Acting Area and the Apron Stage at an angle between thirty to forty degrees.

The Footlights are placed on the floor immediately in front of the main stage curtain. On many stages they are placed in a trough so that they can be covered over and removed from view when they are not required. If they are properly constructed, their light should shine upwards, so that they do not cast shadows on the back wall or sky-cloth.

Immediately behind the valance and front curtain is hung a pipe or batten on which are attached two or more sections of striplights, small floodlights, and baby or fresnal spotlights. This strip provides the main lighting in the Acting Area and a great deal of the general illumination on the set. In big commercial theatres, this front border is supple-



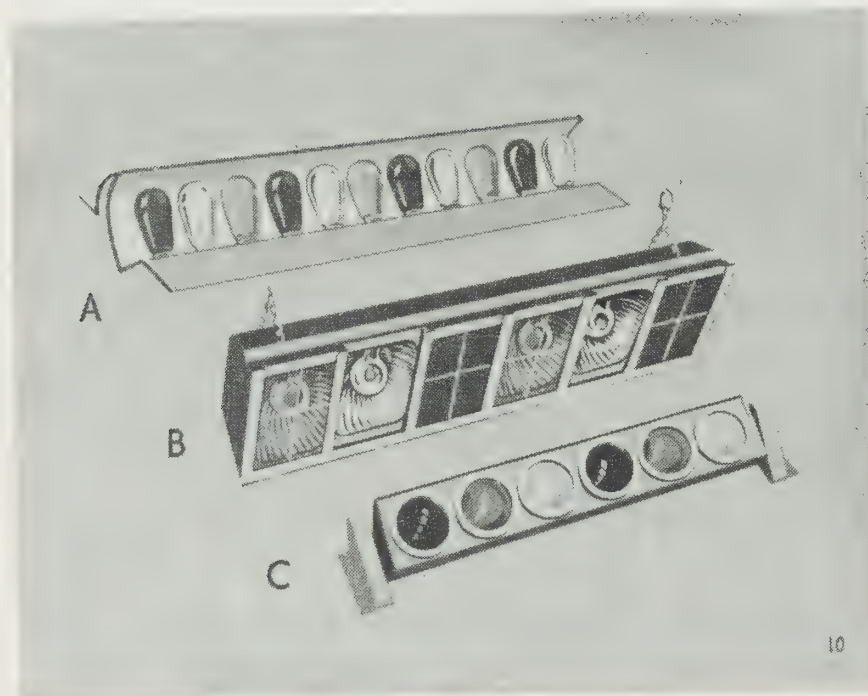
mented by a series of borders, sometimes called X-Ray Borders, hung in succession from the Grid between the Proscenium Wall and Sky-Cloth.

The last of these X-Ray Borders is the Cyclorama Border which is used to illuminate the Sky-Cloth from above. This illumination is frequently increased by the addition of strip-lights placed at the bottom of the sky-cloth and shining up onto it.

In addition to these fixed lights, a number of movable units are desirable. These should include both spots and floods which can be either mounted on stands or used from the the floor. Short striplights which can be hung on Masking Pieces or hidden behind Ground Rows are also very useful. One of the most useful positions from which these movable units can be used is from the ladders or pipe which should be provided on each side of the proscenium arch behind the tormentors. These are called Tormentor or Perch spots.

IN THE SMALL HALL While very few halls are provided with such complete lighting systems, improvised lighting can be arranged to do the various tasks which these instruments perform. The following suggestions are made for an improvised lighting system for such a hall:-

- (1) Front-of-House Lights - two motor car headlights suspended from the beam brackets on each side of the auditorium will give good illumination to the front of the stage. (see Fig.10.F)
- (2) No.1 Batten on front border. A row of honey-pail floods in three circuits fixed to the front of the "chicken wire" grid, or on a batten hung from the ceiling, will do the work of the front strip lights.

Figure 1.The Lighted StageFigure 2.Striplights

- A-Individual bulb Strip
- B-Box Strip
- C-Box Strip with glass roundels



Figure 3.

Commercial  
Floodlights

- A-Olivette
- B-Cyclorama Flood
- C-Batten Flood  
with metal hood
- D-Area Flood

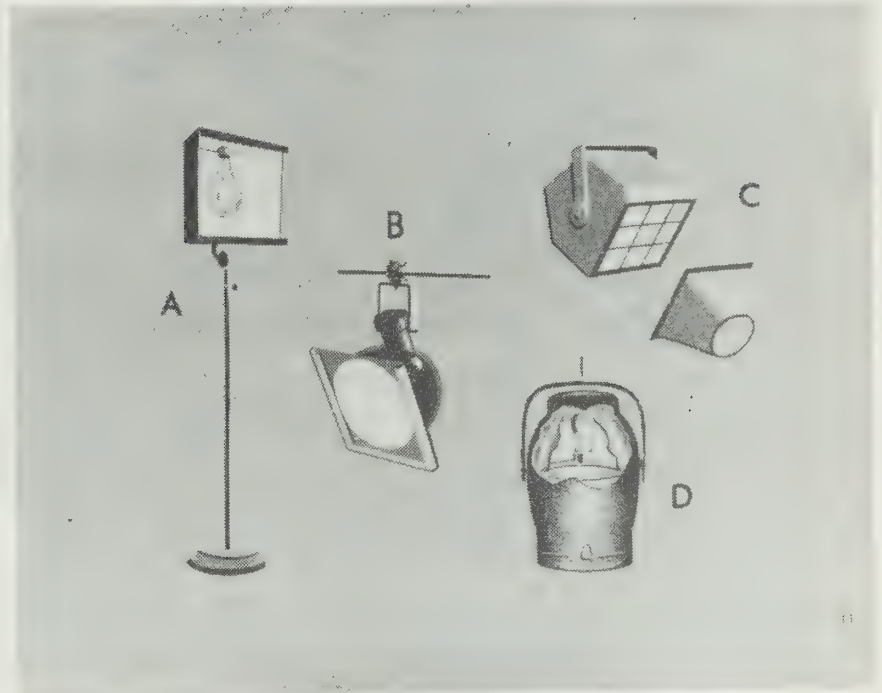
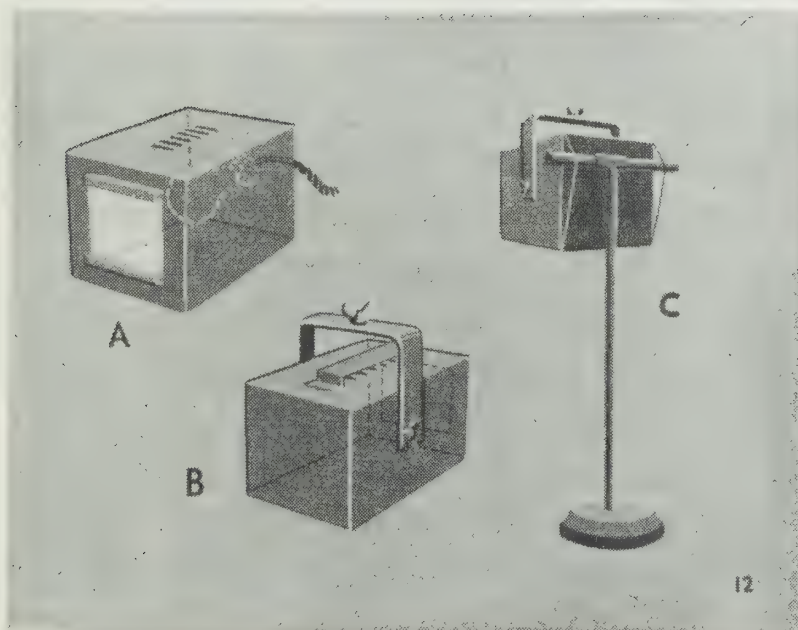


Figure 4.

Home-made  
Floodlights

- A-Biscuit box  
Flood  
(front view)
- B-Biscuit box  
Flood  
(rear view)
- C-Pipe Standard  
and Biscuit Box  
Flood



- Window display bulbs make excellent spotlights for small stages on this front batten. (see Fig.10 D & E)
- (3) An individual bulb strip, wired in three circuits hung from above, can be used to light the sky-cloth. (see Fig.10.B)
  - (4) Two home-made "Stove-Pipe Spotlights" fixed on each side behind the proscenium arch could be used as Tormentor Spots. (see Fig.10.C)
  - (5) Biscuit-box floodlights on stands can be used to shine in windows and doors or to light sky-cloths from the side. (see Fig.10.A)

The "chicken wire" grid described in the booklet and film-strip "Simplified Staging" provides an excellent arrangement for the attachment of such a lighting system.

THE BEST POSITION A short historical survey of theatre lighting will assist thinking as to the best positions for the various lights to be used. The first lighting used in the theatre was from oil lamps and candles. The front of the stage was provided with a long trough of oil in which floated a large number of lighted wicks supported by pieces of cork or wood. This was placed in the position now normally occupied by the footlights and it is from this that the name "floats" is often used for the footlights. This was the chief means of illuminating the faces of the actors. To counteract the strange shadows thus produced, lamps were hung above the players. At first these lamps were in full view of the audience and no attempt was made to darken the auditorium. Later it became the practice to hide these lights behind the arch of the proscenium opening. With the arrival of gas as a means of stage lighting these floats and front borders were enormously increased in power and the whole front of the stage opening was surrounded with a frame of brilliant illumination.



It was only the invention of first the lime light and then the incandescent bulb that made the present system of stage-lighting possible. From this earlier period we have still retained the front border lights and the footlights. We ought to see whether they still have any useful purpose.

In the normal room and out-of-doors, the main source of illumination is from above. If we apply this piece of information to our stage, we will find that we can achieve our most natural effects if our source of light is shining down at an angle of between 30 and 40 degrees. The nearer the direction of this lighting is to the direction of sight of the onlooker, the better is the effect of the light used. (see Fig. 11)

If we place our light sources in the classical position immediately behind the front curtain valance, then we can only get the best effects at the back of the acting area. We need a source of light which is placed somewhere above the head of the audience. The back of the auditorium is too remote for this purpose. Light sources which have sufficient power to throw effective illumination from such a distance are expensive and cumbersome.

LIGHTING FROM FOOTLIGHTS The classical answer to the problem of lighting the front of the stage was the use of footlights. Modern instruments now make other and better solutions possible. If an actor stands on the stage, and the footlights only are turned on, it will be found that the light shines up at a completely unnatural angle forming strange shadows on the forehead and distorting the nose and the appearance of the eyes. In the same way, any other object placed on the stage will be distorted. (see Fig. 12. A)

ADDING LIGHT FROM THE FRONT BATTEN These distorting shadows may be corrected by balancing the illumination from the footlights with corresponding illumination from the front batten. The effects of this on the face of the actor will be to eliminate the offending shadows, but the face will be so brightly lighted that the make-up artist will be required to work full time to paint the shadows back in again so that the actor's face should not appear as a flat white plate. (see Fig. 12. B)

THE SINGLE SPOT Much more natural and satisfactory effects can be achieved if, instead of starting with the footlights, the scene is first illuminated with a single spotlight hung from the ceiling of the auditorium. The illumination should strike the stage at about 30 to 40 degrees. This will give a natural effect, although the shadows on the face will be rather hard and severe; but if the actor moves about and turns his head away from the light, his features will be in shadow. (see Fig. 12. C)

CROSS LIGHTING The next step in improving this lighting is to use another spot from the same general position, but across on the other side of the house. This spot should be giving illumination of a different colour to get the best results. This method of lighting is called "Cross Lighting" and spotlights are generally used in this way. This type of lighting gives shadows of a natural appearance and will give sufficient illumination in the lighted area so that the faces of the actors can be clearly seen no matter which way they may turn. (see Fig. 12. D)

LIGHTING THE WHOLE STAGE It is thus seen that the front-of-house lights give the most natural illumination to the faces of the players. If we try, however, to light the



whole stage from this position, we will find that it is difficult to illuminate the scenery itself and that the players in the illuminated area cast double shadows which are very distracting to the audience. Further general illumination is necessary. This is done primarily from the strip lights which are hung on the front batten. These will give sufficient light to show the settings and properties to advantage. If footlights are available, they may also be used sparingly for the same purpose.

With only two spots in front of the house, the area of bright illumination will be restricted and confined to the front part of the stage. It is, therefore, necessary to supplement them with other spotlights generally placed on the front batten. On small stages, six of these may be sufficient. Cross lighting will also be used and the spotlights can be focused on the playing areas in the back part of the acting area. It should be noted that the more effective the lighting from the spotlights, the less the general illumination required. Ideally, the players should be lit only by means of spotlights and the strip lights used only to give sufficient illumination to the scenery to make it effective. On the other hand, if the spotlights cannot efficiently light the faces of the players, more general illumination will be required with a consequent loss of desirable shadow.

ARE FOOTLIGHTS NECESSARY? The question of whether or not to have footlights is a difficult one. If the front-of-house spots are effective and hung in the best position, footlights can be dispensed with altogether. If they are already present, as they are in most halls, they could be used for addition to the general illumination. If it is not possible to have front-of-house spots, or they cannot be hung in an effective position, then footlights are necessary to illuminate the

players in the very front of the acting area. Their use is and should be strictly limited.

MOTIVATION Granted that the instruments mentioned have been used effectively, there is still need for "motivation" for the light. No provision has been made for the normal natural sources. These are generally off-stage, and it is accordingly necessary to have lighting instruments which can be mounted on stands and directed onto the stage from the side, through doors or windows, to represent the sun, moon or other natural light source.

Not only must the natural light on the stage be motivated but the flats which are used outside doors and windows to provide masking must also be illuminated. It is not always necessary to provide a large instrument for this purpose. It can be done with a small floodlight or by a single bulb mounted on a clip-on fitting and attached to the top of the flat.

LIGHTING THE CYCLORAMA The lighting of the sky-cloth is usually done with a strip hung immediately above it, called the "Cyclorama Border". When the front border and footlights are being used at full power, they will cast shadows on the sky-cloth, and in consequence a much greater illumination will be required in the cyclorama lighting to "kill" these shadows.

MINIMUM EQUIPMENT To carry out the type of lighting visualized in the preceding paragraphs the following is suggested as the minimum equipment desirable:

#### Front-of-House

Specific illumination - 2 spotlights  
directed on the front of the acting area



(Note: Two spotlights only for the front-of-house lighting are regarded by many authorities as inadequate and six or more spotlights in this position are frequently recommended).

### Front Batten

General illumination - Front borders (in 3 circuits)

Specific illumination - 6 spotlights

### Cyclorama Batten

General illumination - (3 circuits)

### Independent Units

Specific illumination ) Two Floods on stands

General illumination ) and two clip lights.

The question of what types of light sources should be used in these various positions will depend upon the dimensions of the stage and auditorium, including the distance from the stage of the furthest spectator. The following rough approximations will give some guide to the types of equipment which can be used. The smaller window display spots will not effectively illuminate an object which is much more than 15 feet from the light source.

The more powerful window display spots, which are now obtainable, can be safely used for distances up to 20 feet. Ordinary baby spots of from 150 to 250 watts, without reflectors, can be used for distances from 15 feet up to a maximum of 25 feet. The 500 watt baby spot, when fitted with a reflector, will effectively throw a beam of light from distances up to 45 feet. To get effective illumination where the light source is more than 45 feet, very special and expensive equipment is generally required.

To give effective illumination with such a setup of lights, from 5 to 10 kilowatts would be required and a minimum of 12 circuits on the switchboard (not including the house lighting). If outdoor scenes had to be lit, then additional stage light sources would be needed: say 2 large floods and 3 baby floods. A switchboard which could be expanded to a minimum of 24 circuits is suggested, and a final maximum load of from 15 to 24 kilowatts would not be out of the way if a progressive system of purchases and additions is to be possible.

It will be seen that the equipment to achieve all these effects makes a very formidable total. Very few groups could possibly contemplate the purchase of such an expensive array of instruments at one time. Any group can, however, start itself thinking along the right lines. Perhaps this year the group will have to be content with using the single 100 watt bulb which is hanging in the centre of the stage. Next year they will be wanting to improve their facilities. Perhaps they will find a use for a couple of old car headlights which have been lying in Bill's barn for the last ten years. Do you know where they could use them? Why not for two front-of-house spots? A group might start a collection of honey pails to make a set of floodlights. Nine of them mounted on a batten would give most efficient general illumination. Four might be used as on-stage floods. The next step might be the purchase of 6 window display spots to give specific illumination from the front batten in the acting area. The following year some general illumination for the cyclorama might be improvised from another collection of honey pails or biscuit boxes.



## VARIATIONS IN INTENSITY

The second variable factor in stage lighting is Intensity. Ideally, it should be possible to dim every light used on the stage, individually, and in groups and all together, with completely even variation from full on to full off. (see Fig. 13) For this purpose "Dimmers" are required. These, unfortunately, are fairly expensive gadgets and few groups will be able to afford as many of them as they would like. The commonest forms are either "Slide Dimmers" or "Rotary Dimmers". Both of these are rheostats and operate in exactly the same way as the volume control on a radio; that is, they are a form of variable resistance which controls the amount of current that is passing through a circuit at any given moment.

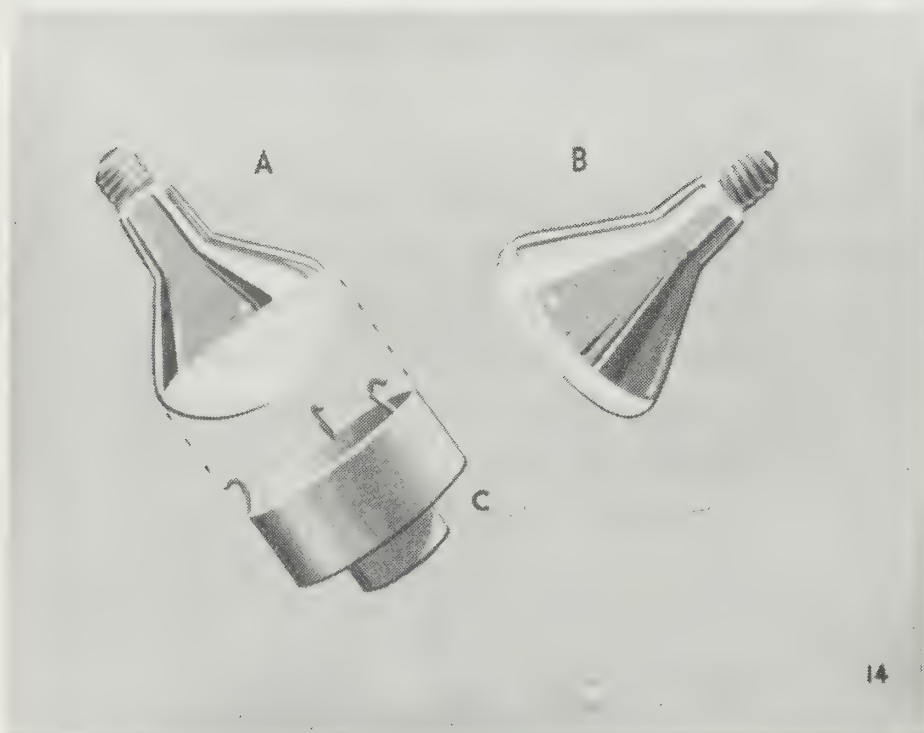
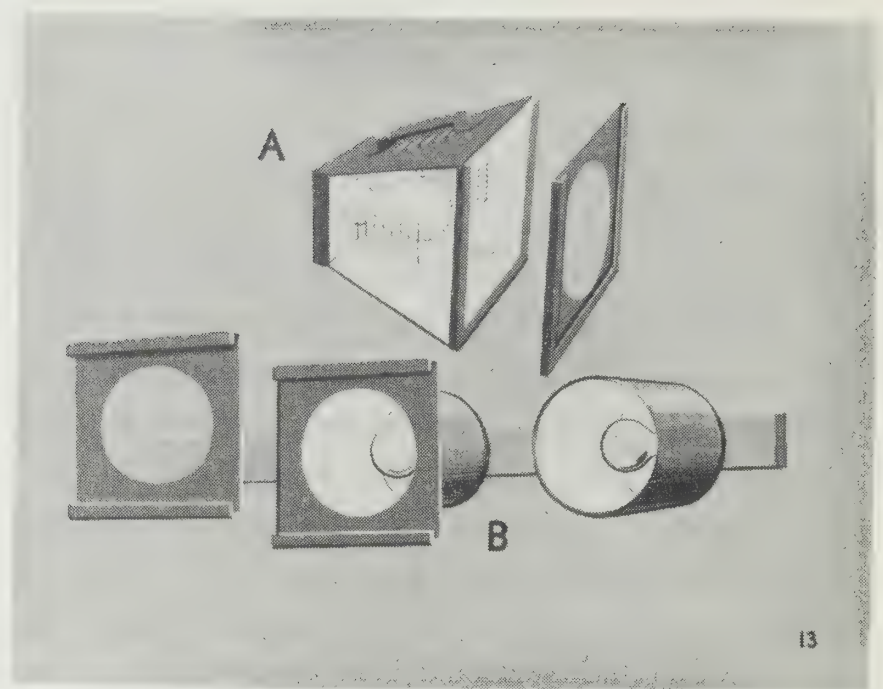
Unfortunately, there is no effective form of homemade dimmer. In the past, some groups have made for themselves "Water Dimmers" and they are described in many of the text books. Such dimmers cannot be used with alternating current and in many provinces fire regulations forbid their use.

The "Auto-Transformer" type of dimmer, or "Variac", is an instrument which is being increasingly used on many of the better equipped stages. It has the advantage over older forms in that it uses practically no electrical energy and does not heat up. It gives a much more sensitive and variable control over the illumination. It can only be used with alternating current.

Ideally, a dimmer for every light source would appear desirable but this is seldom possible or necessary. Some arrangement for dimming all the lights together is also desirable. This can be done either by a mechanical arrange-

**Figure 5.****Home-made  
Floodlights**

- A-Home-made  
Olivette**  
**B-Honey-pail  
Batten Floods**

**Figure 6.****Window Display  
Bulbs**

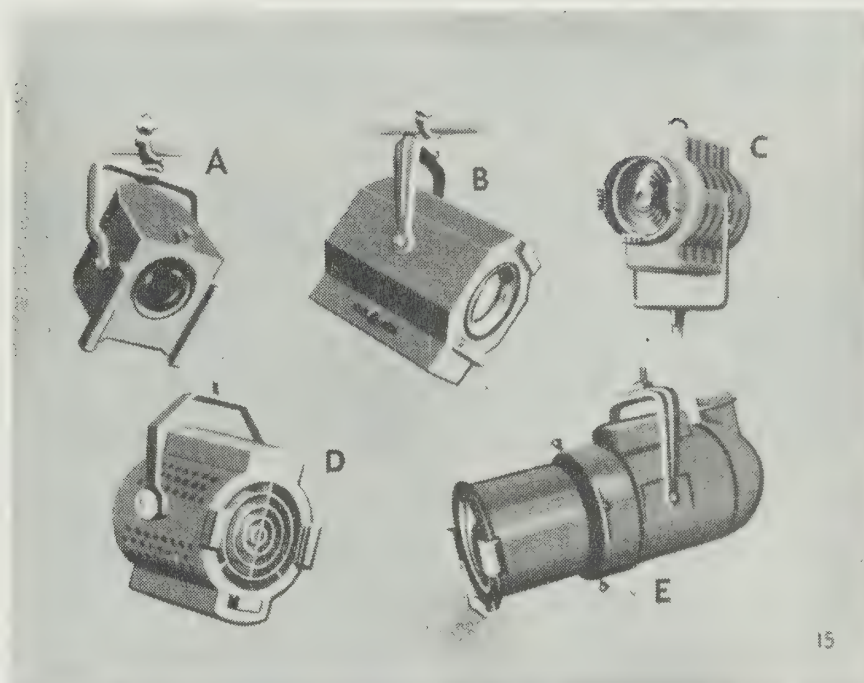
- A-Spotlight**  
**B-Floodlight**  
**C-Colour Frame**



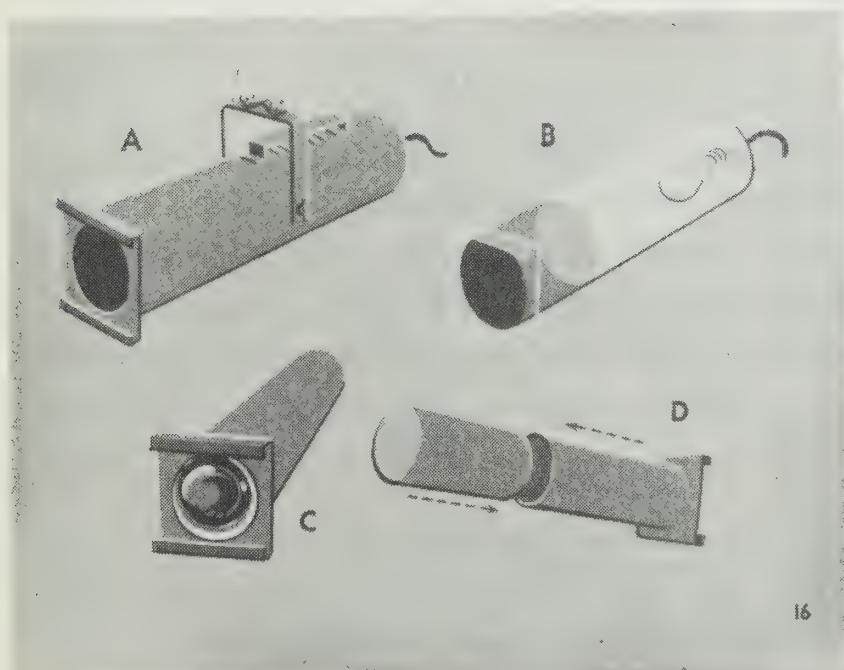
Figure 7.

### Commercial Spotlights

- A-Baby Spot
- B-Mirror Spot
- C-Fresnal Spot
- D-Pageant Spot
- E-Ellipsoidal Spot



15



16

Figure 8.

### Stove-pipe Spotlights

- A-Front View
- B-Detail
- C-Extensible Front  
showing lens
- D-Method of  
Focusing

ment by which all the dimmer handles can be moved by a single handle or by a "Master Dimmer" which controls all the circuits on the stage at the same time.

In actual practice, in the beginning stages groups will not be able to afford any dimmers; even when money does become available, it will not be possible to afford sufficient dimmers for every lighting circuit. What you want to do in the early stages is to see that your electrician connects up your wiring system so that you can use dimmers on every circuit when you have accumulated enough money to buy them. The switchboard should be wired in such a way that every circuit can be used in two ways, either through a dimmer or else direct through an ordinary switch. When you are planning this board, remember that the house lights should be controlled from it and they should also be controlled from a dimmer, if possible. There can be little doubt that the slow dimming of the house-lights followed by the slow rise of the lights on the front curtain creates a feeling of anticipation in the audience and focuses their attention even before the curtain has begun to rise.

In addition to the actual effects which can be achieved by the visible variations in intensity such as sunsets and sunrises, the ability to dim individual lights is essential to obtaining the full effect from your lighting equipment. The best balance of light as between one part of the stage and another can only be obtained when all the light sources are dimmer controlled.

So much for dimmers and the control of intensity... perhaps you will not be able to get all the effects that you want with the equipment that you have. If you know what is necessary,



however, it will be possible to persuade the executive to do some long term planning so that progressive purchases may finally give you a fully equipped stage with all the dimmers that you require.

## VARIATIONS IN COLOUR

WHY COLOUR? The light used on the stage must be capable of variations in colour. These variations are necessary:

- (a) To assist the costume and scene designer by brightening colour values.
- (b) To imitate the effects of nature.
- (c) To create atmosphere and change mood.

BRIGHTENING COLOUR VALUES The usual source of light on the stage is the incandescent electric bulb. The light which it produces is deficient in blue as compared with ordinary daylight and accordingly appears to have a yellow colour. Almost everybody is aware of the deadening effect which ordinary room light has on the colours of fabrics. It is possible, however, to build up white light on the stage which will brighten rather than deaden the fabrics and pigments illuminated.

In theory, it should be possible to make white light from the three primary colours. In actual practice, on the stage, this is not easy to manage. A number of different colours of light can be used to achieve the effect of white. If the choice of colours used include the colour which is predominant in the costume and scenery which is being lit, then the colour will be intensified.

THE EFFECTS OF NATURE It does not need very close observation to realize that the light of afternoon in, say, a

semi-tropical desert is altogether different from the light of afternoon in the far North. This difference is a difference in the colour of the light. It may be necessary to produce the effect of any climate and any hour of the day or night. The lighting equipment must be capable of producing such variations.

ATMOSPHERE AND MOOD The lighting on the stage should accord with the mood of the play. It has already been noted that blue and green are cold colours and that red, orange and yellow are warm colours. Cold colours give a feeling of sadness and gloom; warm colours give a feeling of brightness and comedy.

HOW COLOUR? Coloured lights are produced on the stage by interposing between the source and the object to be illuminated some kind of colour filter. This filter operates by excluding all light of other colours, producing a coloured light. That is to say, a red filter only lets through red light while a blue filter only lets through blue light. Where this process is very complete, the resultant light is said to be "saturated". As filters which give saturated light considerably cut down the illuminating quality of the lights, the use of such filters is confined to general illumination. Where clearness of visibility is the first requirement, filters that give highly "unsaturated" light are generally chosen.

The filters used may be coloured glass, dye on the surface of the bulb, sheets of cellophane, gelatine or similar plastic material. Of these, glass is the most durable, of permanent colour and heat resistant. The range of colour is, however, limited and the initial cost high. Bulbs may be dyed by dipping them in a specially prepared solution and then drying them. This practice is rapidly disappearing



from the stage. The results are not very satisfactory and the colour burns off quickly if light globes of greater power than 50 watts are used.

Sheets of cellophane in frames make very useful light filters. Several sheets will be required to obtain the colour effects desired. Although the range of colour is very limited, by using sheets of different colour nearly all the desired hues and tints can be obtained. Cellophane has the advantage of great strength, durability and cheapness.

The commonest form of light filter is gelatine. It is manufactured in a very wide range of over 100 colours. It costs between 30 and 40 cents a sheet. The disadvantage of the material is that the colours fade in a short time and it becomes very brittle under the influence of heat and humidity. There are several materials now on the market which have greater durability and mechanical strength. They are all more expensive than gelatine and do not have so wide a range of colours. They include Transolene, Transpara and Cinemoid.

COLOUR FRAMES The normal method of fixing these plastic colour filters to the front of lighting instruments is by means of a special frame. These frames are made normally of tin in two parts, one of which is fitted with slits at the side into which the other one fits -- the filter sliding in between. As the heat generated by the lamps used will cause rapid expansion, the gelatine filter should be made to fit loosely into the frames. (see Fig. 14)

## CHOICE OF COLOURS

GENERAL ILLUMINATION No general rule can be laid down for what filters should be used in the lights in the theatre. Every play will require different selections of colour to meet different problems. In most theatres, however, the filters in the borders and footlights remain the same for many years. The commonest choice of colours for these filters is Red, Blue, and Green. This selection probably gives the widest range for colour mixing that can be obtained with only three colours. The filters are, however, very highly saturated and when the number of other instruments is limited, it is frequently the practice to discard the green filters and put in a white known as a "light frost" instead. Another combination which is of particular value for lighting the sky-cloth is Orange, Blue-Green, and Deep Blue. These filters give nearly double the illumination and a very wide variety of shades for lighting the sky.

In many older halls where a stage lighting system has been in use for a long time, the footlights and front batten are provided with Blue, Red, and Amber filters. This practice is not recommended and is, fortunately, rapidly disappearing. The resultant mixture of light does not give a very good variety, and amber light on the stage has a very deadening effect on both costume and scenery and gives a sallow appearance to the faces of the players.

SPECIFIC ILLUMINATION For the spotlights which give the specific illumination, filters in tints are generally required. There are a great many of these available in gelatines and the choice will depend on the effects to be achieved. As has been seen in the section on Distribution the best effects are obtained by cross lighting. A very good practice is to give



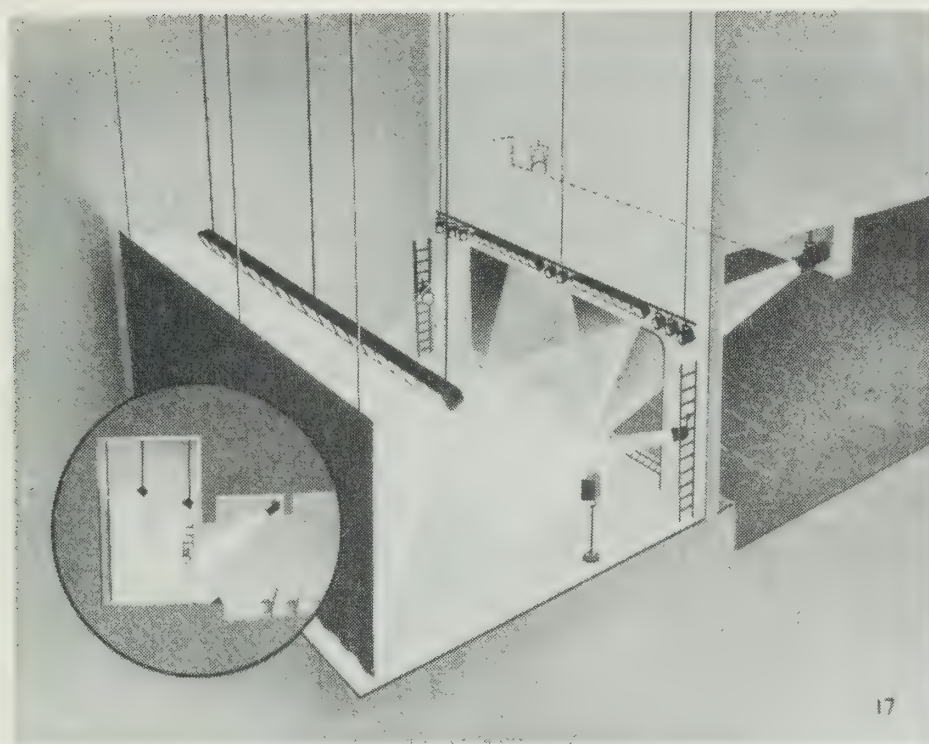


Figure 9.

Position of  
Lighting  
Instruments  
in a Commercial  
Theatre

Figure 10.

Community Hall  
or Auditorium

- A-Olivette  
on stand
- B-Cyclorama Border
- C-Stove-pipe  
Spotlights
- D-Window Display  
Bulbs
- E-Honey-pail  
Floods
- F-Front-of-house  
Spotlights

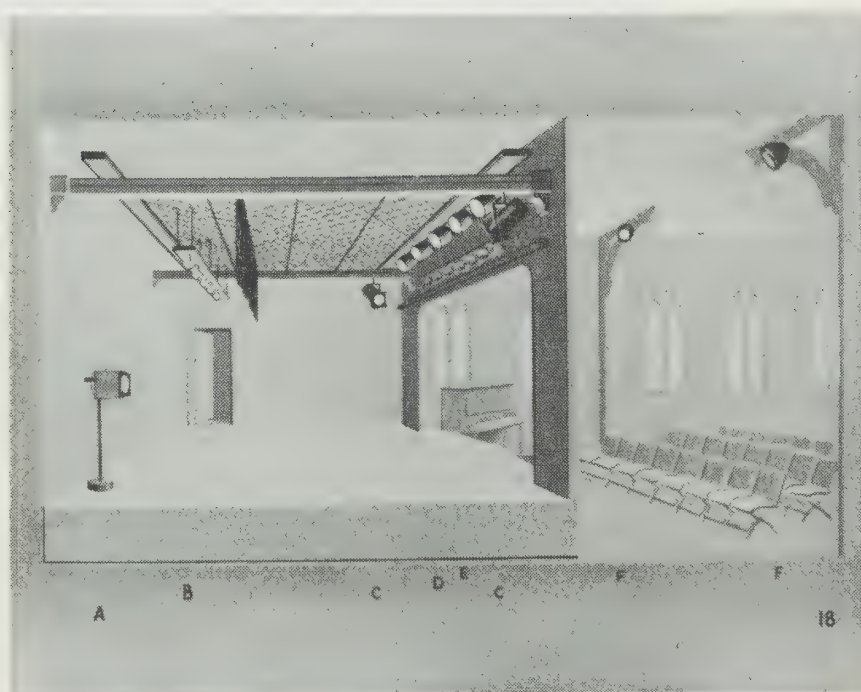


Figure 11.

The Best Angle of  
Illumination



19



20

Figure 12.

Lighting the Actor

- A-Footlights only
- B-Footlights and Front Batten
- C-Single Spot
- D-Crosslighting with two Spots



warm light from one side of the stage and cold light from the other. If the motivating lighting is warm, say the sun, or a fireplace, and appears to come from stage right, then the spotlights on that side will be fitted with filters of a warm tint, while the spots on the other side will be fitted with filters of a cold tint. If possible, the greater illumination should be given to the spots which are giving illumination from the same direction as the motivated lighting. Suitable filters for specific illumination are:-

COLD TINTS  
DAYLIGHT BLUE  
 STEEL BLUE  
 PEACOCK BLUE

WARM TINTS  
GOLD TINTS  
 ROSE OR PINK  
 PALE STRAW

There is an excellent filter called Surprise Pink, which in fact is an extremely unsaturated Lavender. It is particularly flattering to the faces of the players and is accordingly frequently used to light the acting area. Dubarry Pink is a filter which has been specially developed to give the best appearance to people with auburn or red hair.

EFFECTS OF COLOURED LIGHTS ON PIGMENTS It is seldom possible to predict accurately what effect any particular colour of light will have when shone onto the surface of coloured pigment or material. Few of the filters used are optically perfect and the colours of paint or fabric are seldom pure. Scene and costume designers should work in the closest possible collaboration with the lighting crew and should take every opportunity of looking at their work under the actual lighting to be used on the stage. Where this is not possible, they should obtain sample pieces of the filters to be used and look through them at the materials or pigments which they are going to use. They should do so under electric light.

When pure colours are used, however, and coloured light of high saturation is shone on to them, it is possible to predict with fair accuracy what the result will be. If for instance a number of smooth surfaces were painted with Yellow, Violet, Red, Orange, Green and Blue pigments, and Red, Yellow and Blue light were shone alternately on to them, it might be predicted that the following results could be obtained:-

Yellow pigment under Red light appears Red-Grey.  
 Yellow pigment under Yellow light appears Yellow-Grey.  
 Yellow pigment under Blue light appears Yellow-Orange.

Violet pigment under Red light appears Red-Grey.  
 Violet pigment under Yellow light appears Yellow-Grey.  
 Violet pigment under Blue light appears Lavender.

Red pigment under Red light appears Grey.  
 Red pigment under Yellow light appears Red.  
 Red pigment under Blue light appears Black.

Orange pigment under Red light appears Red.  
 Orange pigment under Yellow light appears Orange.  
 Orange pigment under Blue light appears Red-Brown.

Green pigment under Red light appears Brown.  
 Green pigment under Yellow light appears Green.  
 Green pigment under Blue light appears Light-Blue.

Blue pigment under Red light appears Black.  
 Blue pigment under Yellow light appears Dark-Blue.  
 Blue pigment under Blue light appears Blue-Grey.

It will be noticed that coloured light shone on to the pigment of the same colour produces a greying effect, contrary to



expectation. Should another colour of light also be present, however, the colour of the pigment will be made much brighter.

PERMANENT PAINTING In contrast to this, the effect of colour light on a surface which has been painted by the method known as "Permanent Painting", as advocated in the pamphlet on "Simplified Staging", shows much better effects. The surface is first painted with Burnt Sienna which is a neutralized red; when dry, this is then stippled in Chrome-Green; when that is dry, it is again stippled with Ultramarine-Blue. The resultant surface will contain elements of all three colours. When white light is shone on the painted surface, the result is a pleasantly warm tone of grey, the combination of the three colours used. When red light is shone on to it, then only the Burnt Sienna reflects the light, and the surface appears to be mottled red. In the same way, the ultramarine-blue will give an appearance of mottled blue under blue light. With yellow light, both the Burnt Sienna and the Chrome-green reflect light, and the resultant surface will be predominantly yellow. Similar effects may be achieved with any other colour of light that might be used. Scenery painted in this way is capable of many variations in appearance which can be used effectively to mirror the changes in mood in any particular play.

LIGHTING FOR SPECIAL EMPHASIS We have already seen that coloured light shone on an object of the same colour produces a greying effect unless some light of another colour is also present. An extension of this principle can be used to achieve a particularly arresting effect where the director of a play wishes to focus the attention of the audience on a particular coloured object. If specific illumination of the same colour as the object is shone upon it, and then general

illumination of the complementary colour is used, the resulting contrast will give a very vivid effect.

Say for instance, that the object on which the attention is to be focused is a red dress. The director would first illuminate the dress with a single red spot and then add blue-green light from the front border. The red dress will now stand out with added brilliance as the most important thing on the stage. Its own colour will be intensified by the red light to be shone upon it and will be seen in vivid contrast with the blue-green detail and shadows on the other objects on the stage.

In practice, the use of saturated complementary colours in this way must be used sparingly. The contrasts obtained are so startling that they tire the eyes of the audience and make them restless and irritable if used for a long period. Such effects should be reserved for climaxes.

EFFECT OF COLOURED LIGHT ON MAKE-UP The colour of the lights on the stage will have an effect on the make-up used by the players. Before deciding on the make-up to be used the make-up artist should consult with the lighting crew to discover what will be the predominant colour of the light in the acting area. The kinds of effects that may be expected with the following types of lights are:-

**Amber Light.** This colour having a great deal of yellow in it tends to make the complexion sallow and by reducing the contrast between the rouge and the foundation, make the lips and colouring disappear. To correct this, more rouge or rouge with less orange in it is necessary.

**Red Light.** As both the rouge and foundation will reflect the light equally, the player will be pale in appearance.



If blue eye-shadow is used, it will not reflect any of the red light and will appear as black. More rouge of a slightly purplish shade should be used, and the eye-shadow should be green.

Blue Light. The rouge will reflect very little light and will turn black; accordingly, very little foundation with only traces of rouge are to be desired.

Green Light. Such light gives a completely unearthly appearance on the faces of the players and is normally used in the acting area only where special effects such as ghosts or supernatural beings are required. There is a special make-up for this purpose manufactured by certain firms.

SPECIAL LIGHTING EFFECTS When the lighting on a set is naturally motivated, the colour of the filters to be used frequently presents a problem. The quality of electric light does not correspond to natural daylight. Where northern daylight is indicated without any direct rays from the sun, additional blue light is required. Where the rays of the sun can be seen actually shining through a door or window it is recommended that no coloured filter should be used so that maximum intensity can be given. Extreme brightness is the main characteristic of direct sunlight and this is the point that should be emphasized. The warm effect of the sunlight can be got by using a Straw filter in the spotlight which is giving specific illumination in the actual area in which the motivating lighting is falling. For moonlight, the effect to be achieved is the killing of practically all colour. This can be done quite effectively by using two filters in the same colour game, Straw and Pale Blue. For firelight do not use red, but Orange and Light Rose filters together.

Other hints which may be useful are:- Try and make a night sky black, not royal blue; on a small stage this is very difficult as it is seldom possible to keep the acting area lighting from "spilling" on to the sky-cloth and some illumination will nearly always be necessary. If it is desired to increase the illumination from a spotlight, try cutting a small irregular hole in the centre of the filter. If the light from a spot is too hard, a "Light Frost" filter should be used, and if this reduces the illumination to too great an extent, put a spot of vaseline on the centre of the filter to clear it. Lastly, always choose your light filters by electric light or you will be disappointed in the results.

### LIGHTING THE STAGE

Now comes the most difficult part of the programme; that is applying theory and knowledge to the actual process of lighting the stage for the scene. Lighting has five purposes and the necessary equipment should be capable of giving variations in distribution, intensity and colour. The question is how to use the equipment so that the purposes can be fully served.

Every director and lighting expert uses a different sequence of actions in reaching the final effect. Some begin by using the spotlights to illuminate the acting area, and then add general illumination to give tone to the scenery. Others light the scenery first, and then use the spotlights to get sufficient illumination on the players. As it has been seen that the most natural and effective lighting is achieved by using light shining at a forty degree angle from behind the audience, it is suggested that this type of illumination might be the first to be used in working out the lighting for a scene. Then other lights can be added and adjusted to correct errors and complete the total effect.



FRONT-OF-HOUSE SPOTS Start then with the two spotlights which are placed out in the house. Let us say that the motivated lighting is to be from a window on stage right. The right hand spot, therefore, should be first illuminated and focused so as to cover the main part of the acting area. A pale gold filter is suggested as a suitable colour that will give maximum illumination and that warm feeling that is associated with sunlight. From the left spot, we will get the cross lighting which is necessary to give form and meaningful shadow to the faces of the actors and to the details of the stage properties. A steel-blue filter will make a good contrast to the gold.

GENERAL ILLUMINATION Now general illumination should be added to get rid of the ugly double shadows and to illuminate the walls of the room. This should be done from the front border, which it will be remembered, has red, green, and blue lights in it. The colour should be slightly on the green side so as to brighten the prevailing green colour of the set. The lights should be brought up slowly with the red and blue colours at half the strength of the green.

LIGHTING THE SKY The cyclorama batten should now be brought in to illuminate the sky-cloth outside. It will be remembered that the colours in this batten are blue, blue-green, and orange. If the blue and the blue-green are brought in at full strength and the orange about half, the resultant colour will give a steel-blue that will contrast nicely with the warm room inside.

FRONT BATTEN SPOTS It has been suggested that six of these will be necessary. The front-of-house spots will be giving effective illumination on the front of the acting area only. It is not likely that the director will wish to confine

the action of the play to this restricted space. These spotlights, then, can be used to increase the area of effective illumination and also emphasize the motivation of the light from the window.

The three spots on stage right will be used for the motivating process. Spot No. 1 focused on an area close to the window will accentuate the sunlight; pale straw would be a suitable filter. The next two spotlights might be used to give brightness to other important areas across the stage; pale rose would be a good colour which would tone with the warm feeling of the sunlight. The three spotlights on stage left, fitted with daylight blue filters, would make suitable cross lighting in the same three areas.

MOTIVATING THE LIGHT A flood on a stand shining through the window will light up the outside of the window frame and the edges of the curtain, and will achieve the effect of a beam of sunlight coming through from outside. No colour will be needed in this light as brightness is the chief quality required. If it is found that this light is too sharp, a light frost filter could be used. In addition, a small flood or clip light should be placed on the backing flats seen through the doors and windows.

THE LIGHTING PLOT In order to record a scheme for the lighting used, a plan should be prepared showing the stage, the settings, and the furniture, and the lighting instruments in their positions. The direction of the illumination from each source is indicated by lines which strike the stage, and the area illuminated on the stage floor is indicated by curved lines. In addition, the colours of the filters used are named. This is called the "light plot", and it should be worked out in detail before starting the process of lighting the scene.



Figure 13.

Variations in  
Intensity

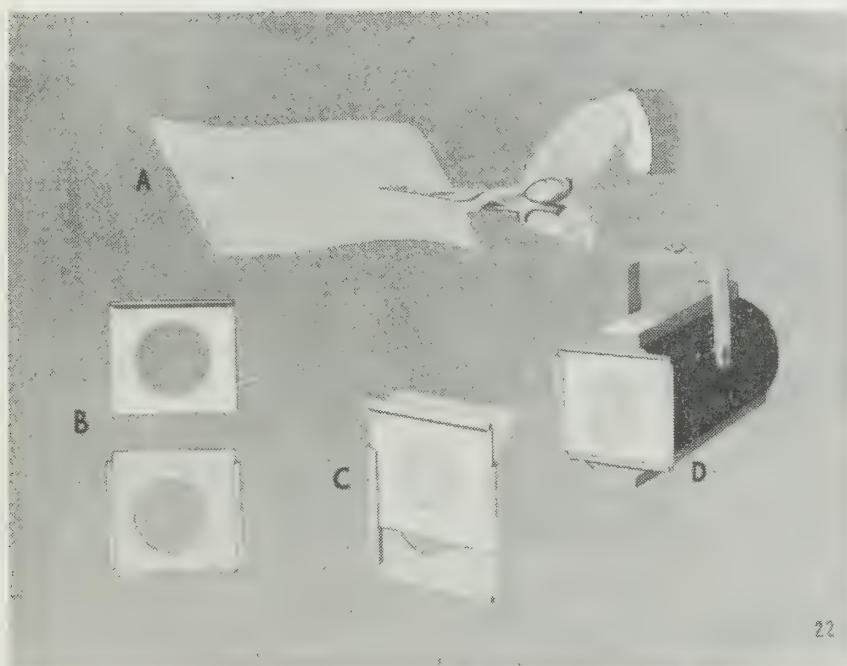
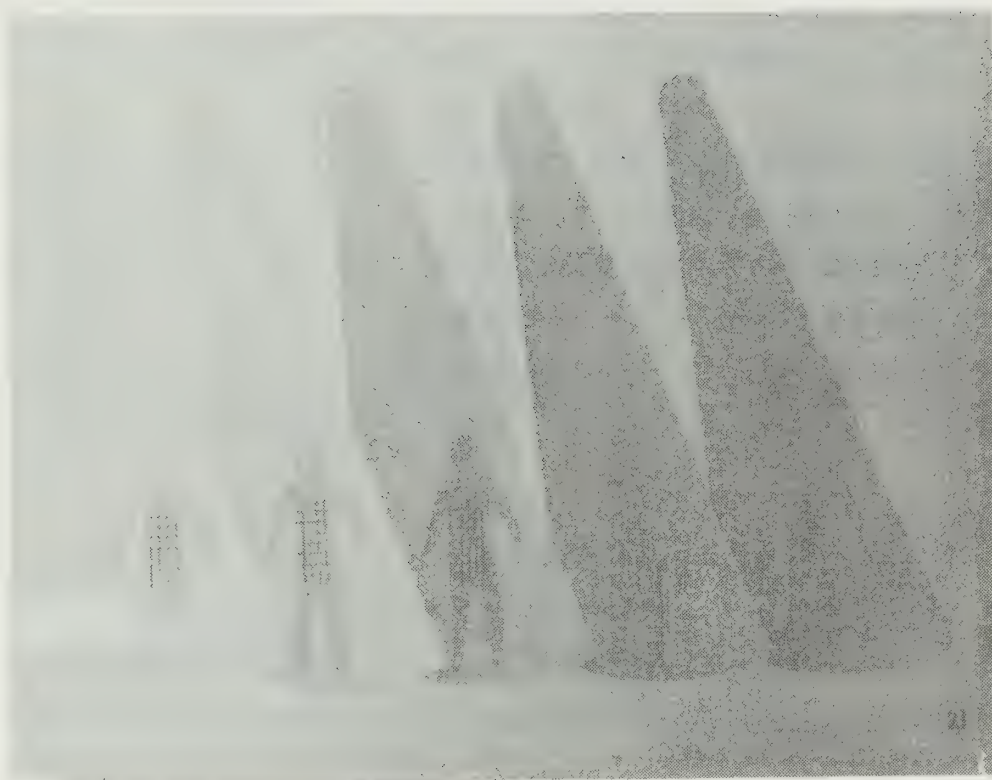


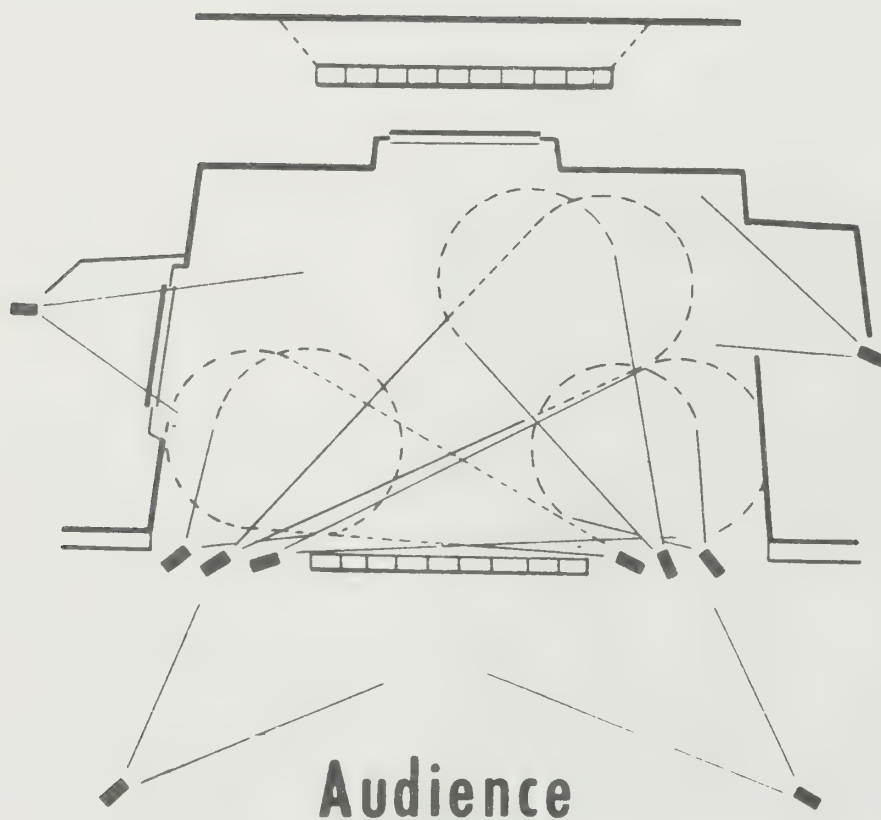
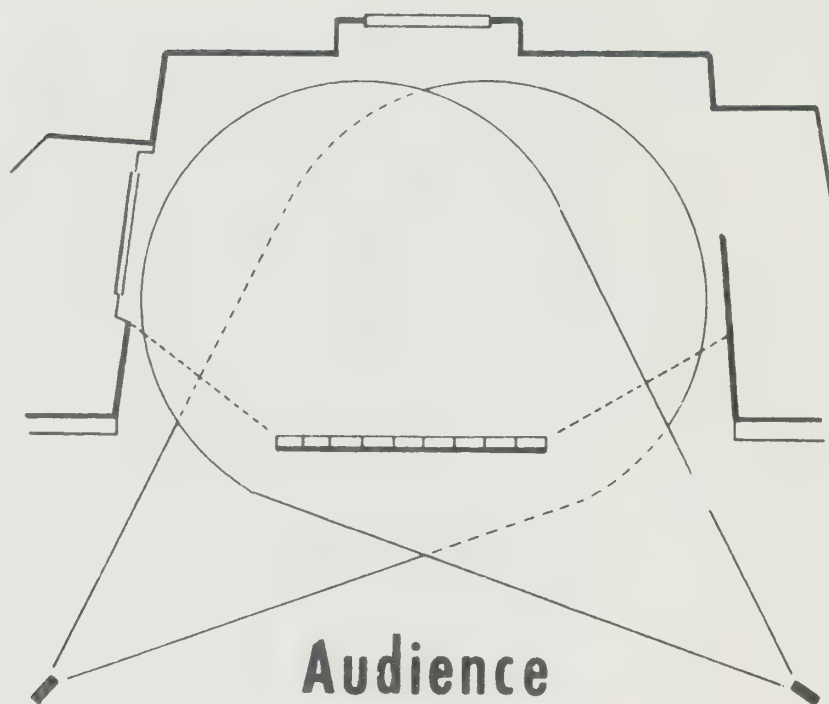
Figure 14.

Colour Filters

A-Gelatine Sheets  
B-Part of a  
Colour Frame  
C-Colour Frame  
fitted together  
D-Colour Frame  
in position

Figure 15.**The Light Plot**

Front-of-house  
Spotlights and  
General  
Illumination

Figure 16.**The Light Plot**

Motivating Light  
and Front Batten  
Spotlights



Many changes may have to be made, however, in this process, particularly in the focusing and direction of the lights and even in the colours of the filters. (see Fig. 15 & 16).

The final lighting can only be decided on the stage itself by the effect that it has on the players as they move about in the acting area. If it is not possible for the players to be present at the light rehearsal, then it is necessary for the lighting expert to have a stage-hand or other assistant who is available, to walk about on the stage and make a visible test of the lighting used.

He should move about the stage paying particular attention to those areas where the main action of the play takes place, so that the lights man can test for dark areas and "hot-spots". As a general rule, such faults can be eliminated by small adjustments to the direction and focus of the individual spots.

The light plot, of course, only represents the lighting for the beginning of a scene. In most plays, the director will require the lighting to be changed in accordance with the action of the players. A light cue-sheet should also be prepared in advance showing the changes necessary and when they take place in relation to the action. These cues should be rehearsed just as carefully as any other part of the play.

### THE STAGE LIT

The lights and filters actually used are summarized below:-

#### Front-of-House Spots

Right Spot ..... PALE GOLD

A warm colour that will give maximum illumination from the

same side of the room  
as the sunlight.

Left Spot .....STEEL BLUE

A good contrast to the  
gold.

#### Front Batten Spots

1.....PALE STRAW

To accentuate the  
sunlight.

2.....)  
3.....) PALE ROSE

To give a prevailing  
warm feeling to the  
room.

4.....)  
5.....) DAYLIGHT  
6.....) BLUE

Cross lighting with  
the straw and rose.

#### General Illumination

(RED  $\frac{1}{2}$  strength  
Front Border....(GREEN Full  
(BLUE  $\frac{1}{2}$  strength

This will produce a  
pale GREEN tint,  
which will brighten the  
prevailing colour of  
the set.

(ORANGE  $\frac{1}{2}$  strength  
Cyclorama (BLUE-GREEN Full  
Batten.....(BLUE Full

To give a steel blue  
sky for contrast with  
the warm room within.

#### Stage Floods

Flood outside  
window & door...LIGHT FROST



This is, of course, only one of the possible solutions to the problem of lighting this particular setting. Every lighting expert will approach the problem in a slightly different way, often to obtain the same or similar results.

## CONCLUSIONS

**PURPOSES:** There are five purposes to the lighting used on the stage:

- (a) Illumination of the players.
- (b) Assistance to the stage design.
- (c) Direction of the attention of the audience.
- (d) Motivation of the light to imitate the effects of nature.
- (e) Creation of atmosphere and mood.

**VARIABLES:** The lighting equipment on any stage should be variable as regards:

- (a) Distribution.
- (b) Intensity
- (c) Colour.

**DISTRIBUTION:**

- (1) The distribution of illumination on the stage depends on the type of lighting equipment used and the position from which it is used.
- (2) There are three general types of lighting equipment for stage purposes:-
  - (a) Strip lights
  - (b) Floodlights
  - (c) Spotlights
- (3) The lighting provided by these units can be divided as between general illumination which gives tone and colour to the settings and specific illumination which lights the players and enables the audience to see and follow the story of the play.
- (4) Striplights are used to give general illumination. Floodlights may be used to give either



general or specific illumination, while spot-lights give specific illumination.

- (5) The best position for a light source is one from which the light strikes the object to be illuminated at an angle of 40 degrees from behind or over the shoulder of the spectator or the audience.
- (6) All lighting on the stage should generally appear to come from a natural source. All light from all sources should agree with this natural motivation.

**INTENSITY:** The intensity of illumination from individual light sources should be variable so that the proper balance can be given to the various areas of the stage which are being illuminated.

- COLOUR:**
- (1) The sources of general illumination are usually given filters of three or more highly saturated colours which can combine to give a great variety of coloured light.
  - (2) These varieties in the colour of the general illumination can be used to brighten the colour values in the settings and to alter the mood and atmosphere of the scene.
  - (3) Sources of specific illumination are provided with filters of unsaturated colour which will give the best appearance to the faces of the players and to the costumes which they are wearing and at the same time give the brightest light so that they may be clearly seen.

In conclusion, in lighting any play, first decide on the effect to be achieved and then work out how it is to be obtained. Stage lighting is an art and as in all arts, feeling and taste play a large part which can be learned. Taste without technique is ineffective. Sound technique will usually produce good results.



## REFERENCE AND RESOURCE MATERIALS

### VISUAL AIDS

#### On Stage! (B&W; 30 min.; Eng. & Fr.; 1950)

A dramatic group in a small Canadian Community try their hand for the first time at the fascinating occupation of putting on a play with happy and successful results. Dedicated to those who like to put on plays with the most fun and the fewest headaches.

#### Prelude to Performance (Colour & B&W; 57 min.; silent; Eng.; 1950)

An amateur drama organization, shows in film, how it organized and carried through a production of Shakespeare's "As You Like It". The film portrays the cooperation essential between the many groups of people engaged in this business of play production. Produced by the Motion Picture Division of the London Little Theatre and adapted by the National Film Board for general use.

#### Stagecraft Series (Filmstrips)

1. Simplified Staging.
2. Stage Settings.
3. Simplified Stage Lighting.

#### Simplified Staging (B&W; 58 frames; with script; 1950)

Basic instructions for constructing stage sets with drapes, plastic units designed to be used with the draped stage, or full scenery, explaining how to handle curtains, how to build, cover and paint flats, and how to erect the complete set.

Stage Settings (Colour; 15 frames; with script; 1950)

The filmstrip covers such points as painting scenery and properties and the value of a colour scheme in the design and execution of all the more usual forms of stage settings.

Simplified Stage Lighting (Colour; 34 frames; with script; 1951)

Basic instruction on how to light the stage in small halls and auditoriums. The filmstrip follows the same sequence as the booklet and covers the same basic points.

Further information on these visual aids may be obtained by writing to any of the Provincial Fitness and Recreation Offices listed on the end page of this booklet or to one of the Regional Offices of the National Film Board of Canada. National Film Board Offices in the United States of America are located at:-

New York -

1270 Avenue of the  
Americas,  
New York 20, N.Y.

Chicago -

Suite 800,  
400 W. Madison St.,  
Chicago, Illinois.

BOOKS, PAMPHLETS AND REFERENCE BULLETINS

(Published by the Physical Fitness Division, Department of National Health and Welfare, Ottawa).

Prelude to Performance (26 pages)

A guide to the organization necessary in the rewarding job of play production and direction, designed to accompany the film of the same name, produced by the Motion Picture Division of the London Little Theatre. It is illustrated with pictures from the film and diagrams and extracts taken from the Stage-Manager's script.

### Putting on a Play (22 pages)

Four radio talks by Mr. Donald Wetmore, Dramatics Adviser to the Adult Education Division in Nova Scotia, addressed to beginning drama groups. The sound sense and good advice that they contain is applicable to any drama group in any community.

### Simplified Staging (26 pages)

Detailed information on stage settings for small halls and auditoriums, designed to accompany and augment the film-strip of the same name. Copiously illustrated with line drawings based on the frames of the filmstrip.

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## GLOSSARY

Acting Area That part of the stage in which the main action of the play may take place in full view of the audience.

Apron Stage That part of the acting area which is in front of the front curtain.

Area Flood A powerful floodlight designed to be hung above the acting area so as to illuminate it from a vertical direction.

Auto-Transformer A type of theatre dimmer which operates by changing the voltage in a particular circuit. It consists of a single coil of wire wound around an iron core, which is used both as primary and secondary, with a carbon brush that can be rotated around it.

Baby Spot Any spotlight of smaller power than 500 watts. Usually has a lens of less than 5" in diameter.

Batten Loosely applied to any length of wood or iron pipe used in the theatre; more specifically used for such a length suspended from above, to which lights, drapes or scenic units may be attached.

Border A striplight which is suspended above the stage to give general illumination in the acting area.

Complementary Colours Any two colours which can be mixed together to make white light.

Colour Filters A transparent material used to produce coloured light by a process of selective transmission. Coloured glass, dye actually on the surface of an incandes-



cent bulb, cellophane and gelatine are the commonest materials.

Colour Frames Frames made of metal or wood to hold the sheets of the colour filters. They are made so as to fit into the slots in the front of the various lighting instruments.

Cross Lighting A system of lighting in which an object on the stage is illuminated from two sources at a wide angle, so as to provide the most effective variation of light and shade.

Cyclorama A plastered wall, cloth or drapes used on the stage to represent the sky or infinity (see sky-cloth).

Cyclorama Border A striplight which is suspended above the stage so as to give general illumination to the cyclorama.

Cyclorama Floodlight A floodlight which can be hung above the stage, fixed to a stand or placed upon the floor so as to give general illumination to the cyclorama.

Dimmer An electrical device which can control the intensity of illumination on the stage,

Drape Any unspecified material hanging in folds as a part of the scene.

Drape Surround A set of drapes hung in such a way as to completely enclose the back and both sides of the acting area.

Ellipsoidal Spot A type of spotlight which is provided with a special reflector which gives a highly concentrated beam of light.

Filter See Colour Filter.

Floats See Footlights.

Floodlight A type of lighting instrument composed of a reflector and a high powered lamp, which gives illumination over a large area.

Footlights Striplights placed on the floor in front of the front curtain to give general illumination from below. Footlights are generally placed in a trough or recess.

Fresnal Spot A type of spotlight fitted with a "step" lens, which gives a soft edged area of illumination, which makes it particularly useful for giving specific illumination in the acting area.

Front Border The striplight which is hung immediately behind the front curtain so as to give general illumination in the front of the acting area.

Front-of-House Lights Spotlights hung in the auditorium either from the ceiling, the walls or the front of gallery, so as to give specific illumination in the acting area.

General Illumination The illumination on the stage which is produced by striplights and floodlights to give shadowless light within the acting area and on the scenery and stage settings.

Grid The framework over the stage and below the stage roof, to which are fastened the pulleys and lines from which scenery, lights, drapes, etc. may be hung.

Ground Row A low horizontal piece of scenery used to represent bushes, walls, distant landscapes, etc., placed on the stage floor to complete the scene at the back.

Light Batten A batten to which lighting instruments may be attached to give illumination onto the stage below. See Batten.

Masking Piece A Flat or Screen placed behind an opening in the set to limit the view of the audience.

Master Dimmer A dimmer provided to control simultaneously all or a number of the lights on the stage.

Mirror Spot A spotlight which is provided with a spherical mirror as a reflector, at the rear of the spotlight housing.

Motivated Lighting Stage lighting which is arranged so that it appears to originate in some natural source, such as the light from a door or window, or a lamp on the stage.

Number 1 Batten The batten which hangs immediately behind the front curtain and which is used to hang the front border and other lighting instruments.

Olivette A common type of commercial floodlight which is normally mounted on a stand.

Pageant Spot A type of spotlight with a specially constructed reflector and no lens, which gives a particularly brilliant beam of light over a long distance.

Pipe Standard A type of stand designed to carry a spot or floodlight so that it can be directed toward the acting area



from the side of the stage. It consists of a heavy metal base and an extensible pipe.

Perch Spot A spotlight fixed on a special bracket near the top corner of the upstage side of the proscenium arch.

Permanent Painting A method of painting surfaces on the stage so that they will take on the colour of whatever light is shone upon them. The pigments used are burnt sienna, chrome green and ultra-marine blue.

Proscenium The architectural wall which usually separates the stage from the auditorium and which provides the frame for the opening through which the audience sees the play.

Rotary Dimmer A resistance control consisting of a high resistance wire mounted on a steel disc and covered with vitreous enamel. The dimmer is operated by the rotation of a contact arm which bridges two concentric circles of contact points.

Saturated Colours In relation to light, those colours which have the smallest proportion of white light.

Sky-Cloth A cloth hung at the back of the stage to represent the sky. It should normally be plain white in colour, and should be lit with coloured light. When coloured light is not available it is frequently painted blue.

Slide Dimmer A resistance control consisting of a vertical slide which comes into direct contact with a resistance wire which is wound around a vertical core.

Specific Illumination The illumination on the stage which is produced by spotlights and floodlights to light the players and gives desirable contrast between light and shade.

Spotlights A type of lighting instrument usually composed of a reflector, a lens and a lamp, which gives a narrow beam of bright illumination in a restricted area.

Stove-pipe Spot A type of home-made spotlight made out of an 18" length of stove-pipe.

Stage Grid See Grid.

Stage Left The left hand side of the stage from the actor's point of view; that is when looking towards the audience.

Stage Right See Stage Left.

Striplights A type of lighting instrument composed of a number of lamps attached together in the form of a strip. Ideally such strips should be wired in three or more circuits, and each lamp should be housed separately.

Tormentor Permanent and semi-permanent flats or screens set immediately inside the two sides of the proscenium arch in such a way that they can be used to adjust the width of the proscenium opening.

Tormentor Spot A spotlight fixed on a bracket behind the tormentor so as to shine down into the acting area.

Unsaturated Colours In relation to light, those colours which have the greatest proportion of white light.

Variac The commercial name for a type of auto-transformer.

Water Dimmer A primitive type of dimmer which uses water as a resistance. Such dimmers can be home-made but are usually forbidden by fire regulations.

X-Ray Border Originally applied to any striplight hung over the stage to give general illumination onto the stage below. Now generally applied to such borders hung behind the front border and in front of the cyclorama border.



## WARNING

The use of home-made lighting equipment may constitute a fire-hazard if not supervised by qualified persons. Groups are advised to contact their local fire chiefs or to write to their provincial Fire Marshal as to fire regulations and necessary precautions to be taken against fire hazards. The addresses of the provincial Fire Marshals are:-

Provincial Fire Marshal,  
Charlottetown, P.E.I.

Provincial Fire Commissioner,  
336 Legislative Building,  
Winnipeg, Man.

Provincial Fire Marshal,  
428 Roy Building,  
Halifax, N.S.

Provincial Fire Commissioner,  
1844 Lorne Avenue,  
Regina, Sask.

Provincial Fire Marshal,  
P.O. Box 699,  
Fredericton, N.B.

Provincial Fire Commissioner,  
233 Administration Building,  
Edmonton, Alta.

Provincial Fire  
Commissioner,  
Parliament Buildings,  
Quebec, P.Q.

Provincial Fire Marshal,  
411 Dunsmuir Street,  
Vancouver, B.C.

In Newfoundland enquiries may  
be addressed to:-

Provincial Fire Marshal,  
Parliament Buildings,  
Toronto, Ont.

Chief of Police & Fire Department,  
St. John's, Nfld.

Additional information may be obtained from the Fitness and Recreation Consultant Services, Department of National Health and Welfare, Jackson Building, Ottawa, and from your provincial Fitness and Recreation Department.

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